



July 13, 2023

Ms. Kimberly Junkins, PE  
Design & Construction Manager, Water Distribution  
Virgin Islands Water & Power Authority  
kimberly.junkins@viwapa.vi

**SUBJECT: Northside Highway Watermain Improvements**

Dear Ms. Junkins:

This water infrastructure design project is a significant opportunity for investment in the community of St. Croix and to advance WAPA's infrastructure, resiliency and operational and environmental performance. Stanley Consultants Inc. has provided award winning water engineering services globally and are pleased to present our proposal for the replacement of 30.6 miles of water main replacement. This project is part of an overall plan to replace and update water infrastructure. WAPA will be utilizing ARPA funding for the procurement of engineering services. The 30.6 miles of watermain replacement will be incorporated into a larger project including sanitary sewer collection system replacement, electrical and communication improvements and rehabilitation of Northside Highway and additional streets impacted by the utility improvement. The purpose of the unified efforts across WAPA, VIWMA and USVI DPW is to have a one dig project.

**Project Understanding**

It is Stanley Consultants' (the Consultant) understanding that the Northside Road Waterline Rehabilitation will upsize the 12-inch and 16-inch ductile iron main along Northside Highway. Sizing of the watermain is currently being confirmed through hydraulic modeling that is to be completed by Carollo Engineers. The proposed watermain material will be C-900 PVC pipe.

The waterline project includes Northside Highway from approximately Melvin Evan's Highway to King Street Kongens Gade to connect to the new 24-inch water main from the Richmond Plant.

Several neighborhoods along the main trunk line are to be included and designed for their respective demands. The remaining neighborhoods will be provided an appropriately sized valved and capped stub-out that will extend to the edge of the ROW beyond the roadway improvements for future connection. The neighboring communities, as shown on the map within the attached appendix A, are to include:

- a. Mon Bijou & Glynn.
- b. Morningstar & Concordia (stub-out provided).
  - o Connection to Head Start School and Good Hope Country Day School.
- c. Richmond-Princess (includes Golden Rock, Little Princess, La Grand Princesse) and a stub-out provided to Judith's Fancy.
- d. Contentment Richmond.

The total length of water main to be replaced is approximately 30.6 miles. The project limits exhibit and a breakdown of the total length of pipe by diameter are included in appendix A.



For all sections of this project, the design is to include the following components:

- a. Stub out or connection for each community.
- b. Fire hydrants every 500 feet for hydrants.
- c. Master meter at neighborhood connection.
- d. Acoustic access points every 250-ft or as appropriate per manufacturer.
- e. Valves at every intersection plus every thousand feet traversing the main line.
- f. Any necessary air release valves.
- g. 1-inch service connections to the meter for 1-inch for every residential plots/accounts.
- h. 2-inch service connections to the meter for commercial accounts.
- i. Federal consistency environmental review.
- j. Local Permit applications.
- k. Three original sets of permitting plans.
  - i. Permit fees to be directly paid by WAPA.
- l. Updated WAPA specifications and details.
- m. All recommended upgrades listed in the survey.
- n. Verification of exiting meter boxes and any relocations of these.

### **Project Deliverables**

The Scope of Work is to design approximately 30.6 miles of new watermain with project limits provided by WAPA. The design project involves the preparation of plans, specifications, bid items list, bid schedule, and engineering estimate of probable construction costs. All design will be in accordance with the American Water Works Association (“AWWA”) Standards where applicable.

It is our understanding that the Consultants may have more flexibility in the schedule compared to the initial December 2024 completion date. WAPA will work the ARPA funding agency to finalize the completion date. Because the watermain replacement is a part of a larger project it will be necessary to obtain pertinent information from and coordinate with the various agencies and individuals that directly relate to the subject project such as WAPA, Waste Management Authority (“WMA”), Department of Public Works (“DPW”), and other relevant agencies.

The following project deliverables are included:

#### **A. Information Gathering, Preliminary Engineering Study and Conceptual Design (30%)**

The Consultant intends to utilize Subconsultants to perform the following data collection. Javier E. Bidot Surveying and Mapping and Antillean Engineers will provide surveying services for this project.

##### **1. Topography and Base Maps**

Recent topography maps of the project area will be obtained and utilized to create a base map for the project. The subconsultant will establish baseline with well-established survey points. Survey along the alignment will show all substantial surface structures at least 10-feet beyond the edge of the right-of-way when accessible. Existing above and underground features will be verified to the best of the surveyor’s ability by field checking.



## 2. Survey of Pipe Route

The subconsultant will perform a field survey of the proposed route. A baseline will be established on streets for control for line and grade, new construction, and existing utilities. Key survey monuments will be tied to at least two reference points. The number of residences requiring services will be determined. The limits and type of material of pavements, sidewalks and other features will be noted on the survey.

The subconsultant will conduct detailed field survey of existing meter boxes, meter numbers, and service line locations. WAPA will provide an excel file with data to be captured during the field survey.

WAPA made the request for detailed survey services 3-5.

## 3. Ground Penetrating Radar (“GPR”) Survey of the Water Main Route

- a. Obtain two longitudinal scans along pipe route, one at center of each roadway line. Place distance paint marks along roadway at each 50-foot location.
- b. One lateral scan across the roadway at all locations where there are curb cuts. Identify station location and direction of each lateral scan.
- c. All buried facilities will be located by station and distance right or left along the roadway centerline.
- d. Locate all objects within 6 deep, scan to 10 feet in areas of drainage structures.
- e. Save all scanned files for future use by WAPA.

## 4. Detailed As-Built Survey of Water Main Route

- a. Walk thru pipe route with copy of field survey and obtain added as-built information.
- b. Height of walls.
- c. Details of landscape features.
  - i. Other features that need to be included on the base plans.

## 5. Utilities Location

The survey will obtain horizontal and vertical survey information including the property boundary, curb cuts, new land developments requiring water service, walls, sanitary sewer manholes’ invert, top, sewer lines, pipe size and direction flow, storm manholes’ and pipes’ inverts and tops, catch basins, electrical and communication manholes’ inverts and tops, utility poles, fences, and underground utilities to be marked by GPR. It is desirable to locate those features and utilities within six inches of their actual position. The Consultant team must show all of the above-mentioned utilities and conduct visual inspections to confirm existing utilities not shown on the as-built. WAPA personnel will assist, if necessary, to indicate location of water and electrical lines in the field. The Consultant team will be responsible for surveying and mapping. Show all existing water valves, hydrants, air/vacuum release valves, pressure control valves, and other appurtenances to a precision of inches. All the collected data must be plotted onto the plan and profile drawings and tied to the survey baseline by station and offset or other survey methods.

## 6. Subsoil Investigation

Obtain subsoil information for the project route. The subconsultant will perform the geotechnical investigation. Subsoil borings will be taken every 1,150 linear feet [350 linear meters] to determine subsoil information and where rock is likely to be encountered. Bore information will be shown on the



drawings. Geotechnical findings related to pipeline installation and pavement restoration will be provided in a brief report including subsoil generalized conditions, testing results, and recommendations.

7. Coordination meeting with other Utilities/Parties.

The Consultant will hold meeting with appropriate representatives from the DPW, VIYA Telephone, Virgin Islands, Fire Department (“VIFD”), WMA, and any other pertinent agencies to introduce the project, solicit any concerns, and identify any potential conflicts that may arise from planned construction by other parties. The Consultant will document discovered information.

8. Coordination meetings with Permitting Agencies.

The Consultant will set up teleconferences with permitting agencies to discuss the project details and determine the necessary permitting requirements and submittals and associated timing.

9. Preliminary Engineering Study.

The preliminary engineering report will include the following:

- a. Summary of discussions with and modeling input to and output from Carollo Engineers for the sizing of water main along Northside Highway and the location for future storage to provide capped stub-out with valve. Stanley Consultants will size piping within the neighborhoods but will confirm flow availability and impacts with Carollo Engineers and their system wide model.
  - b. Final recommendations on pipeline sizes based on demand and fire flow scenarios for each neighborhood. Confirm final sizing of Northside Highway with Carollo Engineers before advancing design.
  - c. Installation considerations based on the geotechnical report.
  - d. Valve recommendations.
  - e. Permit matrix with list of required permits for the project design and construction.
  - f. Investigation of the acoustical access points and associated design.
  - g. Coordination on the gravity sewer design.
10. Conceptual Design (30% Design Submittal).
- The conceptual design will include layout of the new water main in plan view for WAPA input prior to development of 70% design.

**B. Preliminary Design (70% Submittal)**

The Consultant will coordinate closely with WAPA’s assigned project manager throughout the entirety of the design. The following items shall be included in the 70% design submittal.

1. Contents of Drawings.
  - a. Arrangement.
  - b. Index.
  - c. Location map.
  - d. Subsoil information.
  - e. Datum plane and survey reference points.
  - f. Waterline plans.



- g. Waterline profile.
  - h. Waterline details.
  - i. Water sampling and disinfectant details.
  - j. Leak detection system details.
  - k. Service connections and meter box standard details.
  - l. Fire protection details.
  - m. Appurtenances and special structures.
  - n. All designs shall meet reasonable standards of constructability.
  - o. Temporary road rehabilitation plans in coordination with all involved utilities.
  - p. The traffic construction plan is to be developed using the Manual of Uniform Traffic Control Devices in coordination with all involved utilities.
  - q. Suggested construction phasing.
2. Contents of Specifications and Offeror Bid Documents.
- a. Assemble the specifications and Offeror Bid Documents in the following order. The most current version of these documents will be provided by the Authority and updated by the Consultant as necessary. This work for the Northside project will need to be completed in conjunction with the other utilities.
  - b. Proposal Form(s)
    - i. Request for proposal(s)
    - ii. Proposal Form(s)
  - c. Specific and General Provisions
    - General Requirements
    - Specific Provisions
3. Technical Specifications.
- Probable Estimate(s) of Construction
- Provide a probable estimate for construction cost following the format of the Proposal Schedule developed. Provide an estimate for the project construction schedule. Provide a proposal items list, following the bid schedule, showing the items to bid on (valves, acoustic points, meter boxes, service connections, etc.).
- Field Inspection of Design.
- After preliminary design has been submitted to and reviewed by WAPA, coordinate and conduct an on-site review of the entire design, including underground utilities, areas of utilities conflict, areas where relocation of underground utilities will or may occur, locations of service connections and other potential concerns.
- Permitting.
- Based on permitting requirements determined during development of the preliminary engineering report, Stanley Consultants will begin the permitting processes with each of the agencies.



### **C. Final Design (100% Submittal)**

The final submittal shall include design completion; bid documents, probable estimates of construction cost, schedules, bid items list and specifications incorporating any revisions requested by WAPA from preliminary design. At this point of the design, the waterline layout should show all service connections, meter boxes, hydrants, etc. The plans should include detailed water details, general notes section, completed profiles and layouts, traffic plans and details, construction schedule and any special structures and all relevant information.

### **D. Bid Documents**

Following WAPA review of the Final Design, the Consultant will incorporate final minor comments and resubmit Bid Documents to WAPA.

### **E. Bid Assistance**

The Consultant will provide bidding assistance to WAPA. It is yet to be determined how many contract packages will be developed at this point in predesign. For the tasks below, it is assumed two design packages will be developed. Bidding services will include:

- a. Attendance of two prebid meetings, for each contract.
- b. List of questions and response memorandum from the pre-bid meeting.
- c. Addenda based on submitted questions (maximum three per contract package).

### **Project Assumptions**

1. The project design period will start by October of 2023 and be completed by April 2024. Bidding services will start within 4 months of design permit approval and incorporation of changes into issued for bid drawings.
2. For the purposes of this proposal, it is assumed the project will be one design contract with construction documents that separate Northside Highway work out from improvements within the neighborhoods to allow for simultaneous work.
3. Submittals will be comprised of the preliminary design report and the 30% conceptual design; 70% preliminary design, 100% final design and issued for bid documents (four submittals).
4. It is assumed that WAPA is the only agency performing reviews of the watermain improvements. Stanley Consultants will align with other utilities during the design process so that utility routing is coordinated. Submittal review periods will not exceed beyond 15 working days or 21 calendar days, whichever is longer.
5. Meetings:
  - Kick-off Meeting / Workshop: 3 days (in-person meeting) with four staff members.
  - Three submittal review meetings: 2 days each with three staff members in-person and others as needed by teleconference.
  - Three Public Meetings: 1 day (in-person) each with three staff members.
  - Permitting Meeting/site walk-through: 3 days (in-person) total with two staff members.
  - Bi-weekly check-in MS Teams meetings: 1 hour with design team members as needed.
6. Trip for additional mid-project investigation visit (4 days, 3 staff members)



7. Deliverables:

- Deliverables will include PDF format for reviews, AutoCAD and shape files and Excel for the field meter data.
  - Four independent bid schedules/cost estimates/schedules will be provided for Northside Highway limits and each of the three neighborhoods.
8. Sheets will be designed to be printed on 11"x17" sheets, 1:40 scale. For final deliverables: Three (3) 22"x34" printed plans will be provided to WAPA and DPW.
  9. WAPA technical specifications will be updated for this project. WAPA will provide the front-end documents.
  10. Assumes three (3) printed plans for permitting agency submittal to DPNR.
  11. WAPA will work with the Consultant to coordinate with Carollo Engineers on hydraulic model assistance for this project.
  12. Final sizing on the larger watermain by Carollo Engineers shall be provided by the start of the 70% design to prevent delays in the design.
  13. WAPA will work with Consultant's Team to mark infrastructure and locate valves and other critical infrastructure.
  14. WAPA will work in conjunction with public works to provide data on existing/future population and land use and other data to determine water demand in each of the subject neighborhoods.
  15. WAPA will work with the Consultant to find existing meters.
  16. Water service laterals will be replaced to the meter. Meters are to be located at the edge of the property line near the street. Property owners will be responsible to connect to the meter. WAPA will be responsible for communicating with property owners on the owner's responsibility to connect to the meter.
  17. All subsurface utilities adjacent to the existing waterline to be replaced are unknown at the time of submitting this proposal. We understand that coordination may need to occur for other utility work including future gravity sewer replacement. It is unclear if there is available room in the existing right-of-way to abandon the existing water main and sanitary sewer. For this proposal it is assumed that the existing water main will be abandoned in place, but this can be re-evaluated while developing the preliminary design report and the approach to replacement. A fee proposal for developing a removal plan will be submitted at that time.
  18. Permitting costs are excluded from the fees and shall be paid directly by WAPA.
  19. Our cost proposal is valid for 90 days upon receipt.
  20. Cost saving opportunities have been incorporated for overlap with the Northside Highway Roadway Improvements project but not the gravity sewer project. The engineering consultant for that project is not yet determined.

**Project Exceptions**

1. Improvements to booster stations, treatment facilities and storage. Stanley Consultants can provide additional services to assist with improvements to other infrastructure as requested by WAPA.





2. Full road surface reconstruction. Roadway improvements are under a separate engineering contract.
3. Construction Phase Services. Stanley Consultants intends to provide suggested construction phase services for this project. If our team were to be selected to proceed with design, we would like to meet with WAPA to understand all the required services, from RFI and shop drawing review to assisting with procurement, inspection, commissioning, and starting up the system. Once the scope is defined, we will submit a suggested construction phase scope of work and associated fee.

**Additional Optional Services (not included in current services)**

The Consultant shall perform a SCADA study to determine the feasibility to add remote monitoring and controls to WAPA's water infrastructure. We understand that WAPA currently does not utilize remote monitoring or controls for any of their facilities. If requested, we could provide a feasibility study with the following tasks:

- a. Site Visit – 1 I&C engineer, 1 week
  - i. Initial report
    - Compile inventory of remote sites, with the following info:
    - Existing controls equipment models (PLCs, OITs, autodialers, etc)
    - OIT screenshots
    - GPS coordinates
    - Desired telemetry point lists
    - Existing SCADA info, if any
    - Software, version, license, point limits
  - b. Review Initial inventory report with Owner. Discuss remote control needs at each site.
  - c. Conduct software-based radio path study (hire 3rd party with the software), based on GPS coordinates.
  - d. Final Report: Make recommendations to implement remote monitoring & control.
  - e. Remote site recommendations: current state, and path forward for:
    - i. Control Panels
    - ii. PLCs
    - iii. Touchscreen HMI
    - iv. Instrumentation
    - v. VFDs / motor starters
    - vi. Control valves
    - vii. SCADA recommendations (at central facility)
      - SCADA software – upgrade or replace
      - Location and quantity of workstations
      - Local hosted vs cloud (web-based) system
      - Cybersecurity
  - f. Discuss remote connectivity options
    - i. Analyze results of software-based radio path survey
    - ii. Weigh advantages / disadvantages of Cellular, unlicensed spread spectrum radios, or licensed radios
    - iii. Any possibility for fiber
  - g. Estimate of probable construction cost





### **Updates from the May 26<sup>th</sup> Proposal Submittal**

The follow items highlight the changes made to this proposal from the previous proposal submitted proposal on May 26, 2023:

- Removal of the 100,000-gallon storage tank from the scope of work.
- Reduction in the level of effort on temporary roadway restoration with the knowledge that the intent is for this to be a one dig project paired with the roadway work. Roadway improvements will be covered under a separate contract with DPW.
- Reduction of the survey by approximately \$200,000 from reducing the boundary from 40 feet to 10 feet beyond the ROW. The original survey costs included utilizing existing survey data from original the Northside Highway survey. There is some cost sharing opportunity with VIWMA for shared survey effort.
- No reduction level of effort or fee for geotechnical services. The Northside Highway Roadway Improvements project had limited bores at shallow depths.
- Slight increase in printing and reproduction costs based on meeting input.

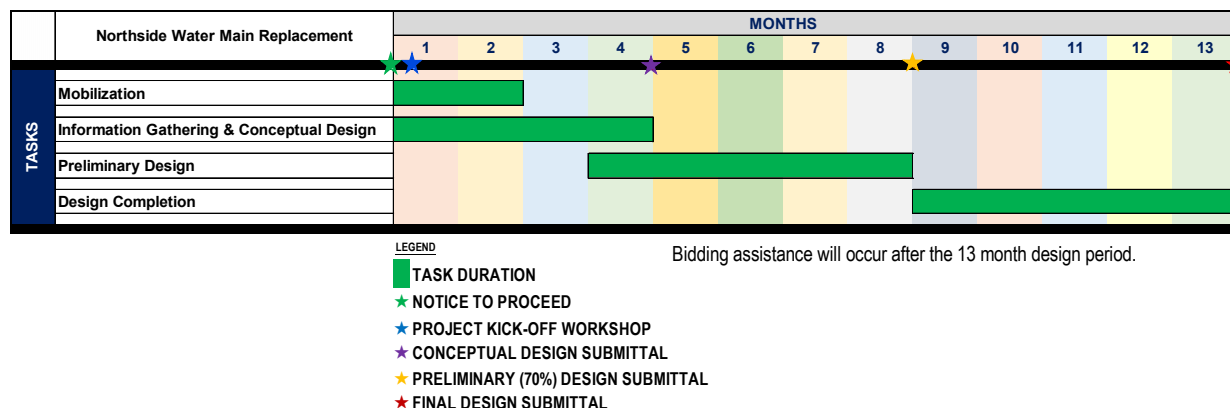
### **Design and Payment Schedule**

The below fee is representative of the design costs associated with executing the project in conjunction with the roadway project. There are additional opportunities for cost savings in the survey, geotechnical and environmental permitting costs if the sanitary sewer improvements are added to Stanley Consultants' scope of work. Additionally, there may be some additional efficiencies in plan development, coordination and on-site time that can be achieved by designing both water and sewer concurrently. We will further evaluate these opportunities as the selected consultant for the sanitary sewer improvements is finalized. An additional breakdown of the below summarized costs can be found in Appendix B.

WAPA Northside Highway Watermain Replacement		
Provided By: Stanley Consultants		
Design & Payment Schedule		
Component	Percentage (%)	Amount (\$)
Mobilization	40.00%	\$2,580,000.00
Information Gathering & Conceptual Design	30.00%	\$1,935,000.00
Preliminary Design	20.00%	\$1,290,000.00
Design and Bidding Completion	10.00%	\$645,000.00
Total		\$6,450,000.00



Per our meeting on 5/30, it is our understanding that there may be some flexibility in the proposed schedule. Additionally, the schedule will need to be reconsidered with all utility and roadway work occurring under one contract. Below is the schedule we presented in our previous proposal. We will make updates as final scope and contracts are finalized over the next months.



We look forward to working with WAPA on this project. If you have any questions about our proposal or approach, please contact our local Client Services Manager, Michael Penn, PE (U.S.V.I. # 0-17089-1B), who will serve as the main point of contact for the duration of the contract. His contact information is (561) 584-8734 (office), (561) 236-8789 (cell) and email: [PennMichael@stanleygroup.com](mailto:PennMichael@stanleygroup.com).

Sincerely,

Michael Penn, PE  
Client Service Manager  
Stanley Consultants, Inc.

cc: Kate Despinoy, PE, PMP

Attachments: Appendix A, Appendix B





# Watermain by Size

		Princess		Mon Bijou/ Glynn	Golden Rock/ Richmond			
24"	20"	12"	6"	6"	6"	12"		
16506	18465	6096	288	4385	1120	4176		
1755		897	958	651		1349		
318		1087	514	590		848	6"	63162
		2268	631	2046		126	12"	61587
		1466	845	2602		3543	20"	18465
		3773	904	325		901	24"	18579
		4620	514	2313		661	<b>Total</b>	<b>161793 feet</b>
		1176	922	1301		460		<b>30.64261 miles</b>
		646	904	1622		1139		
		919	1881	1998		1795		
		4550	962	895		984		
		395	1713	3379		1064		
		1442	782	586		283		
		1223	1069	624		1463		
			584	625		738		
				1808		259		
				4680		663		
				1422		70		
				1437		708		
				1442		82		
				1276		629		
				1253		661		
				759		507		
				742		912		
				6854		633		
				708		172		
				746		1609		
				762		1543		
				740		1741		
						1310		

## Exhibit B - Fee Breakdown

Northside Highway Water Replacement		
1. Meetings		
Site Investigation and Project Kick-Off Meeting	\$456,069.60	
In-Person Review Meetings (preliminary engineering reports, 30% design, 70% design, prefinal, final), telecom for some disciplines		
Bi-Weekly Check-in Meetings		
On-site Utility Midproject Coordination Meeting		
Internal Meetings		
2. Subconsultant Coordination, Data Collection and Review, Data Management / Local		
Topographic Survey	\$343,912.80	
Geotechnical		
Environmental Study		
Permitting / Zoning Requirements		
3. Preliminary Design Report - Hydraulic Modeling, Layouts		
Collect and Review Available Data	\$322,718.60	
Develop Assumptions on Flows		
Verify GIS and Edit and Coordination on Hydraulic Model		
Develop Schematic Map with Layout & Required Sizing		
QA/QC		
Draft Report		
Final Report		
Project Management		
4. 30% Design Development (Conceptual Design)		
Watermain Replacement (Plan View) and Details; Plan view 1:40 scale with Aerial background	\$1,271,940.60	
Roadway Typical Sections. Includes design and plans production.		
Temporary Roadway Plans/Details		
Includes design and plans production.		
Stormwater Pollution Prevention Plans. 2 sheets narrative/notes. 10 sheets tabulate locations of temporary erosion control BMPs and summarize quantities.		
Maintenance of Traffic (MOT) - Roadway. Phasing Typical Section only (x 6) PLUS 10 Detour plans.		
Specification TOC		
QA/QC		
Packaging Submittal		
Project Management		
5. 70% Design Development		
Water Replacement Alignment (Plan View) and Details; Plan view 1:40 scale with Aerial background.	\$1,097,521.60	
Roadway Typical Sections. Includes design and plans production.		
Temporary Roadway Plans/Details.		
Includes design and plans production.		
Stormwater Pollution Prevention Plans. 2 sheets narrative/notes. 10 sheets tabulate locations of temporary erosion control BMPs and summarize quantities.		
Maintenance of Traffic (MOT) - Roadway. Phasing Typical Section only (x 6) PLUS 10 Detour plans.		
Specifications		
QA/QC		
Packaging Submittal		
Project Management		
6. Final Design Development and Resubmittal for Bid		
Water Plan and Profiles, Details	\$876,395.20	
Roadway Typical Sections. Includes design and plans production.		
Temporary Roadway Plans/Details.		
Includes design and plans production.		
Stormwater Pollution Prevention Plans		
Maintenance of Traffic (MOT) - Roadway		
Construction Phasing		
Cost Estimating		
Specifications		
QA/QC		
Packaging Submittal		
Resubmittal (for Bid)		
Project Management		
7. Permitting Submittal and Coordination		
Package Development and Submittals	\$132,014.40	
Responses		
8. Bidding Assistance		
Prebid Meeting (1), Meeting Agenda/Prep, Meeting Minutes	\$242,827.20	
Developing Addendums (estimated 3)		
SUBTOTAL		\$4,743,400.00
9. Subconsultants		
Javier E. Bidot, Professional Land Surveyor and Mapper - Survey		\$700,000.00
Antillean Engineers Incorporated - Survey		\$400,000.00
Jaca & Sierra - Geotechnical		\$350,000.00
BioImpact Inc. - Environmental/Permitting		\$61,600.00
Resilient Analytics - Climate Impact		\$60,000.00
SUBTOTAL		\$1,571,600.00
10. Expenses		
Project Expenses		\$135,000.00
TOTAL		\$6,450,000.00